

Course Title	Accelerated Data Science and Machine Learning Bootcamp
Course Length	Two (2) consecutive weekends
Target Audience	This bootcamp course is ideal for aspiring data scientists, data analysts, business analysts, software engineers, and professionals from various domains looking to transition into the field of data science. Basic programming knowledge and familiarity with mathematics and statistics concepts are recommended but not mandatory.
Prerequisites (if any)	Python or Programming Knowledge
Language of Instruction	English

Course Description
<p>The Accelerated Data Science and Machine Learning Bootcamp is an immersive and comprehensive training program designed to equip participants with the essential skills and knowledge needed to excel in the dynamic field of data science. Through a blend of theory, hands-on projects, and real-world applications, participants will learn how to extract valuable insights from data, build predictive models, and make data-driven decisions across various industries. This intensive bootcamp covers a wide range of topics, from data wrangling and statistical analysis to machine learning and data visualization, preparing participants to become proficient data scientists and analysts.</p>

Course Learning Outcomes	
LO1:	Data Exploration and Analysis: Participants will be able to perform exploratory data analysis (EDA) using various data visualization techniques and statistical methods to gain insights, identify patterns, and draw meaningful conclusions from complex datasets.
LO2:	Machine Learning Proficiency: Participants will acquire a solid foundation in machine learning algorithms, enabling them to build and evaluate predictive models for regression, classification, and clustering tasks.
LO3:	Data Wrangling and Pre-processing: Participants will develop the skills to acquire, clean, and preprocess raw data, addressing missing values, outliers, and inconsistencies, to ensure data quality and suitability for analysis.
LO4:	Feature Engineering and Selection: Participants will learn how to select and engineer relevant features from data, optimizing model performance and enhancing the predictive capabilities of machine learning models.
LO5:	Real-World Project Experience: Through hands-on projects and case studies, participants will gain practical experience in applying data science techniques to real-world datasets and business scenarios, preparing them for real-life data challenges.
LO6:	Data Visualization and Communication: Participants will be able to create compelling data visualizations that effectively communicate insights and findings to non-technical stakeholders, facilitating data-driven decision-making.
LO7:	Ethical Considerations in Data Science: Participants will be aware of the ethical implications and potential biases in data science projects, understanding the importance of responsible and unbiased data analysis and decision-making.
Assessments/Graded Components	
Throughout the course, participants will gain practical experience, refine their skills through hands-on projects, and build a strong foundation in data science concepts. By the end of the bootcamp, participants will be equipped to tackle data-driven challenges and contribute effectively to data science projects in diverse industries.	

Course Summary			
	Module Name	Key Concepts/Topics Covered	Assessments
1	Introduction to Data Science	In this lecture, participants will be introduced to the world of data science and its broad applications across industries. They will learn about the data science workflow, including data acquisition, cleaning, and preprocessing techniques. The lecture will lay the foundation for the course and provide an overview of the key concepts in data science.	
2	Exploratory Data Analysis and Visualization	Participants will delve into the importance of exploratory data analysis (EDA) and how it helps uncover patterns, trends, and relationships within datasets. They will learn how to use statistical methods and data visualization tools to gain valuable insights from data. Through hands-on practice, participants will explore real-world datasets to reinforce their understanding.	
3	Machine Learning Fundamentals	This lecture will cover the fundamentals of machine learning, including both supervised and unsupervised learning algorithms. Participants will understand the principles behind classification, regression, and clustering tasks. They will also get the opportunity to build basic machine learning models and learn how to evaluate their performance.	
4	Feature Engineering and Model Optimization	Feature engineering and selection are critical aspects of data science. In this lecture, participants will discover techniques to choose relevant features from data and engineer new ones to improve model accuracy and efficiency. They will also explore how to handle missing data and outliers and optimize their machine learning models using cross-validation and hyperparameter tuning.	
5	Data Visualization	Effective data visualization is essential for conveying insights to non-	

	and Communication	technical stakeholders. Participants will learn how to create impactful visualizations that communicate complex findings in a clear and understandable manner. They will be introduced to data visualization tools and libraries and practice creating interactive visualizations.	
6	A Real-World Projects and Ethical Considerations	In this final lecture, participants will apply their knowledge to real-world data science projects. They will work on hands-on exercises and collaborate with peers to solve practical data challenges. The lecture will also discuss the ethical considerations in data science, ensuring that participants are aware of potential biases and the importance of responsible data analysis and decision-making.	Presentation / Project

Supplementary Reading Material

All material/slides will be provided during class.